## P36

**Patellofemoral cartilage lesions treated with both autologous cultured chondrocytes implantation and surgery to optimize the biomechanical environment**

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**Purpose:** To evaluate a comprehensive treatment approach that includes autologous chondrocyte implantation (ACI) and biomechanical altering procedures to reduce impairment and symptoms in patients with patellofemoral lesions and biomechanical pathologies.
**Methods and Materials:** Thirty-eight patients (39 knees; mean age 31.2 years) had large isolated (trochlear = 4.3cm$^2$; patellar = 5.4cm$^2$) or bipolar (mean total surface area = 8.8cm$^2$) patellofemoral lesions between September 1998 and November 2005. Eight-seven percent (33/38) of patients had a surgical procedure concomitantly with the ACI. The most common concomitant procedure was anteromedialization (74%). Patient data was prospectively recorded for all patients treated with ACI. The subset that had patellofemoral joint ACI treatment between September 1998 and November 2005 were evaluated in this study. At baseline, patient outcome scores, patient demographics, prior surgeries, and data from a physical exam were collected. Articular cartilage defect characteristics and information on concomitant surgeries were collected during implantation. At periodic follow-up visits, clinical outcomes were prospectively assessed using the modified scales of the Cincinnati Knee Rating System (patient-reported and physician-rated), the patient-reported Lysholm scale, and patient-reported VAS for maximum pain and pain at rest.
**Results:** Median clinical follow-up was 3.1 years. Eighty percent of patients reported their overall condition as good, very good, or excellent according to the modified Cincinnati score.
**Conclusions:** The results from this study lend support for the strategy of combining ACI and corrective procedures to treat knees with symptomatic patellofemoral compartment chondral lesions in which there is a suboptimal biomechanical environment.

## P37

**Salvage and repair of osteochondritis dissecans with aticular cartilage paste grafting**

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**Purpose:** Osteochondritis dissecans is traditionally managed by debridement, fixation, or a combination of cartilage stimulation and transplantation techniques. Failure of these treatment methods may further compromise the defect site. We present a case series of our experience with primary and failed OCD reconstruction and demonstrate the utility of articular cartilage paste grafting as a treatment option for OCD lesions, particularly for those that have already failed standard treatment.
**Methods and Materials:** Eight subjects diagnosed with OCD (average age 31, range 17 to 51) were surgically treated for OCD lesions using an articular cartilage paste graft technique[1]. Average lesion size was 634 mm$^2$ (range 100 to 1400 mm$^2$) with a measured mean of over 10mm deep. Three had no previous surgery and 5 presented with previously failed procedures including: 2 failed drilling/microfracture; 2 failed OATs with fixation; and 1 failed primary fixation. Table I summarizes all patient data at a minimum of 2-year follow-up.
**Results:** Seven of eight subjects are considered clinical successes as assessed by a combination of clinical and subjective findings. Three patients underwent paste grafting for primary treatment. Five underwent paste grafting for salvage of failed procedures including OATS, screw fixation, drilling, and microfracture. Average follow-up time was 63 months (range 24 to 95). Mean Tegner activity for successful subjects (N=7) increased from a pre-operative 2.86 to a postoperative 6.86 and compared directly to pre-symptom level of 6.57. The pre-symptom to pre-paste graft decrease in activity scores includes five of eight subjects that had failed attempts at surgical repair of their OCD lesions.
**Conclusions:** Left untreated, large OCD lesions can lead to massive defects and present a formidable challenge to manage surgically. Furthermore, if primary repair fails, few options exist for salvage of the articular surface. An ideal treatment could heal both articular cartilage surface and subchondral bone without risk of worsening the treatment site should failure occur. Our studies support the efficacy of articular cartilage paste grafting as a treatment for primary and salvage OCD reconstruction.

## P38

**Arthroscopic debridement and abrasion for knee osteonecrosis in young patients**

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**Purpose:** Osteonecrosis is often a difficult situation for orthopedic surgeons because of the young age and the patients functionnal request. Knee arthroplasty does not give the same long term excellent functionnal result than hip arthroplasty. Therefore we opte for a conservative treatment wich is the arthroscopic debridement and abrasion. The purpuse of this retrospective study was to expose the results of this surgical technique.
**Methods and Materials:** We retrospectively review 17 knees (12 patients). The surgical procedure consisted in an arthroscopic debridement: the joint injury assement was first done, the visualisation of chondral flaps lead to the resection of the dead cartilage until the sub-chondral bone was bleeding and every join foreign bodies were extracted. The functionnal scores used were the Lysholm score and the knee society score. These scores were assess before surgery and at the last follow up. A radiological (RMI and plain radiographs) study during the follow up aimed to determine the cartilage evolution.
**Results:** The mean follow-up was 5,5 years (1,1 – 13). The mean age at the time of surgery was 27,8 years (18- 46). The Lysholm score and the Knee Society Score 24 points increased (49-73 and 52-76). The mean volume of the treated necrotic area was 15,3 cm3. At the last follow-up, three patients showed osteoarthritic changes. None required a total joint arthroplasty.
**Conclusions:** Arthroscopic debridement is an attractive issue for the treatment of knee osteonecrosis in young patients. It permits to relieve them waiting for a potential arthroplasty.

## P39

**Two years clinical results for chondrocytes in a hydrogel in lesions of the femoral condyle**

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**Purpose:** Validation by a Phase II clinical study of histological healing and clinical improvement of femoral condyle cartilage defects treated by autologous chondrocytes implantation in an agarose-alginate matrix.
**Methods and Materials:** A two years prospective multicentric study has been conducted for grade 3/4 (ICRS) single lesions of the femoral condyle (surface < 5cm$^2$), invalidating (subjective IKDC Score < 55), of traumatic origin or osteochondritis dissecans. Treatment: Cartilage biopsy, cellular expansion and incubation in an agarose-alginate hydrogel, manufacturing of implants simply placed into the prepared lesion. The mean criterion was the evolution of the subjective IKDC score, the secondary criteria were arthroscopy aspect, histology, MRI, and surgical technique.
**Results:** 20 patients have been included, 17 completely treated: 12 Men & 5 Women, average of 30 years old, 37 average IKDC initial score and 3 cm$^2$ lesions surface. IKDC at 24 months: 77,8 ($p< 0,001$), 16 patients improved. The IKDC results were significantly superior for lesions > 3 cm$^2$, and almost significant for osteochondritis dissecans and grade 4 lesions. MRI: 10 patients on 15 presented an identical signal / normal cartilage, no visible transition for 11 /15. 13 arthroscopies: average ICRS score of 10/12. Histology: O'Driscoll average score of 16/21. 8 patients (over 60%) presented a predominantly hyaline cartilage, 3 a mixed hyaline and 2 fibrocartilage. The average surgery time was 41 minutes.
**Conclusions:** The cartilage graft in hydrogel allows a significant clinical improvement especially in deep and large lesions with a homogeneous cells distribution explaining the good histological results.